CARCINOMA OF THE BREAST.*

A STUDY OF THE PATHOLOGICAL CONDITIONS AND THEIR RELATION TO THE QUESTION OF RECURRENCE.

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My hospital cases have been included in the report made from the Massachusetts General Hospital. The following report concerns only my private cases down to the year 1904. In this series were many advanced cases in which the operation was a desperate effort to prolong life. There was no selection of cases, operation being done in every case that offered except in one where the co-existence of advanced heart disease and a large adherent carcinoma led to palliative efforts with the X-ray. The cases were all carefully studied pathologically and the after history has been closely followed. There were forty-two cases. All recovered from the operation and of these nine are entirely free from recurrence. The time elapsed since operation in these nine cases has been in 1 case 4 years, 1 case 5 years, 1 case 7 years, 1 case 8 years, 2 cases 10 years, 1 case 11 years, 1 case 14 years, 1 case 19 years.

Five other cases are still living though they have had a recurrence of the disease. One of these was operated three years ago, three of them were operated four years ago, and one five years ago.

The remaining twenty-eight cases have died of the disease. Of these seventeen died in one year. Two lived two years. One lived three years. Two lived four years, and six lived five years.

Of the nine cases that are well without recurrence the pectoral muscles were removed in two. In the remaining seven the breast and axillary contents were removed without removal of the muscles.

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TABLE I.—NON-RECURRENT CASES

No.	Age.	Name.	Extent of involvement.	Duration.	Date of operation.	Magnitude of operation.	Variety of carcinoma.	Time elapsed.
1	About 50	Miss H.....	.....	Some months.	Nov., 1888.	Breast removed and axilla cleaned out.	Paget's disease.	19 years.
2	54	Mrs. S.....	Nodule size of horse-chestnut. No glands in axilla.	10 years.	Dec., 1893.	Entire breast, axilla cleaned out and connective tissue between breast and axilla removed.	Scirrhous cancer. No infected glands found.	14 years.
3	60	Miss S.....	Small nodule.	Recent discovery.	Apr., 1896.	Breast removed and axilla cleaned out.	Scirrhous cancer. No infected glands found.	10 years. Died in 1906 of pneumonia.
4	About 36	Sister A.....	Chronic fibrous thickening; one point size of pea showed scirrhous cancer.	Just discovered.	July, 1896.	Whole breast and axillary contents removed.	Scirrhous cancer. No infected glands found.	11 years.
5	52	Mrs. W.....	Small nodule in breast.	Some weeks.	July, 1897.	Breast removed and axilla cleaned out.	Carcinoma of adenomatous type. Two lymphatic glands show metastasis.	10 years.
6	About 55	Mrs. B.....	Irregular rounded growth 2.5 to 3 cm. in diameter. Skin not involved. No glands in axilla.	Recent discovery.	Apr., 1899.	Breast and axillary contents removed.	Plexiform medullary cancer. No infected glands.	8 years.
7	About 67	Mrs. M.....	Nodule deep in upper outer quadrant 1.5 cm. in greatest diameter. No glands in axilla.	Recent discovery.	Feb., 1900.	Breast removed and axilla cleaned out.	Adenocarcinoma of mild type. No affected lymph nodes found.	7 years.
8	32	Mrs. P.....	A dense nodule about 2 cm. in diameter. Commencing infection of lymph nodes.	Few months.	Oct., 1902.	Breast and pectoralis major removed, axilla cleaned out, dissection carried as far as subscapular vessels.	Early cancer of tubular type of alveoli. One lymph node affected.	5 years.
9	About 45	Mrs. W.....	.....	.....	Apr., 1903.	Breast and axillary contents removed with pectoralis major and minor and all glands and tissue up to clavicle.	Carcinoma. Lymph nodes enlarged.	4 years.

In the five cases still living with recurrence the muscles were removed with the breast and axillary contents.

Of the twenty-eight cases that have died the muscles were removed with the breast and axillary contents in twelve cases.

In the remaining sixteen cases the breast and axillary contents alone were removed.

Nature of Growth.—In the nine non-recurrent cases the disease was usually of a mild type. In Case 1 it started as a Paget's disease of the nipple and at the time of removal a cancerous nodule was appearing in the breast beneath. Three of the other cases had carcinoma of adenomatous type. Three had small scirrhous cancers.

One had a small plexiform medullary carcinoma and in one case of unmistakable carcinoma the pathological report has been mislaid and cannot be found. In six of these cases careful search failed to show any infected lymph nodes. In the other three moderate infection of lymph nodes was found. In two cases, Nos. 1 and 7, of the non-recurrent series, a little epithelioma of the face co-existed with the breast cancer. In Case 1 after fifteen years a second epithelioma appeared on the opposite side of the face.

In the thirty-two cases where the disease recurred the pathologist failed to report condition of glands in three cases. In the remaining twenty-nine cases there were but three cases in which at the time of the first operation the pathologist reported a failure to find infected glands.

From this it will be seen that the instances of non-recurrence were in cases of localized disease which had not or had only just begun to invade the lymphatic system. On the other hand in the recurrent cases, with but three exceptions the lymphatic system was already seriously involved. It is interesting to note that in two of these three cases in which infected lymph nodes were not found there was no local recurrence nor involvement of neighboring lymphatics, but the symptoms pointed to a distant internal secondary growth. In the third of these cases the recurrence was in the supraclavicular glands.

Case 19 was interesting from the fact that this patient

TABLE II.—RECURRENT CASES.

No.	Age.	Name.	Extent of involvement.	Duration.	Date of operation.	Magnitude of operation.	Variety of carcinoma.	Recurrence.	Result.
1	28	Mrs. P.....	Lump as large as hen's egg over edge of sternum skin adherent. Glands in axilla.	2 to 3 years.	1885.	Breast and axilla.	Border line between medullary and scirrhous cancer. Infected glands found.	Local recurrence.	Died. No date.
2	About 42	Mrs. G.....	Tumor beneath nipple, which was retracted and hard. Axillary glands.	6 months.	May, 1889.	Breast and axilla.	Cancer with implication of axillary glands.	Operated again in Oct., 1889. Local recurrence in axilla.	Died in 1890?
3	48	Mrs. H.....	Small nodule in outer part involving skin, 2 pea-sized nodules near by. In axilla small mass of medullary-looking glands.	4 months.	March, 1890.	Breast and axilla.	Scirrhous cancer of breast and axillary glands.	Probable.	Died in 1892 in England of pleurisy.
4	About 60	Mrs. S.	Nodule size of pecan nut. Glands in axilla.	3 months.	1890.	Breast and axillary contents.	Scirrhous cancer. Glands in axilla affected.	Probably first in lung.	Died in 1891 of recurrence
5	60	Mrs. L.	Dense retracting nodule outside of nipple.	Just noticed.	Oct., 1891.	Breast removed. Axilla dissected.	Medullary cancer. No infected glands found.	Oct., 1905. Operation for recurrence. Supraclavicular.	Died in 1897 from recurrence.
6	.....	Miss F.....	Large retracting nodule. Axillary glands much enlarged.	.....	Nov., 1891.	Breast removed. Axilla dissected.	Cancer. Enlarged and infected axillary glands found.	Dec., 1894. Probably in mediastinum.	Died in 1895.
7	60	Mrs. H.....	.....	.....	July, 1892.	Breast removed. Axilla dissected.	Carcinoma.	Feb. and July. Operation for recurrence.	Died?

8	40	Miss B.....	Nodule beneath nipple entire thickness of breast and through into fascia. Glands in axilla.	Some months.	Sept., 1892.	Breast removed. Axilla dissected.	Carcinoma. Numerous infected glands in axilla.	Small cancerous part removed from axilla in 1897.	Died.
9	About 50	Mrs. M.....	Nipple retracted. Implication of lymph glands.	8 months.	1894.	Breast removed. Axilla disseeted.	Diffuse scirrhous caneer with implieation of the lymphatie glands.	Rueerrenee in liver and elsewhere.	Died one year later.
10	54	Mrs. G.....	Large retracting nodule. Axillary glands enlarged.	9 months.	1894.	Breast removed. Axilla dissected.	Caneer. Glands infeeted.	Operation for glands above elaviele in 1895.	Operation in angle of jaw. Died in 1895.
11	.....	Mrs. D.....	Contracted nodule size of large cherry bencath nipple. Several glands in axilla.	.....	.....	Breast removed. Axilla disseeted.	Medullary caneer with secondary implication of lymph glands.	Operation for reeurrenee Mar., 1898. Probably in ehest.	Died one year after reeurrenee.
12	48	Mrs. H.....	One small nodule of carcinoma in middle of hreast.	Recently discovered.	March, 1896.	Breast and entire axillary contents removed.	Typieal carcinoma.	1st in pectoralis muscle Apr. 1897. Nodules removed at different times. Metastases to stomaeh and brain.	Died in April, 1901.
13	60	Mrs. M.....	Diffuse fibrous thiekening gland. Small retracting nodule near nipple. Gland in axilla.	Few weeks.	June, 1896.	Breast and axillary contents removed.	Scirrhous caneer. 1 small infected gland found.	Sept.. 1896. Nodules removed.	Died in fall of 1897.
14	45	Miss P.....	Diffuse and ill-defined growth occupying considerable part of hreast.	Reeently noteed.	Dec.. 1897.	Breast removed and axilla dissected.	Medullary caneer. Numerous lymph glands infected.	September. 1899. In ehest.	Died in 1899.

TABLE II.—RECURRENT CASES.—*Continued*

No.	Age.	Name.	Extent of involvement.	Duration.	Date of operation.	Magnitude of operation.	Variety of carcinoma.	Recurrenee.	Result.
15	58	Mrs. L.....	Extensive hard mass in middle of breast.	Some months.	July, 1898.	Breast removed and axilla dissected.	Carcinoma with metastases in axillary fat tissue.	Recurrenee within a year. Local and general.	Died in 1899.
16	45	Miss G.....	Large nodule in breast and palpable glands in axilla.	Some months.	Sept.. 1898.	Breast removed and axilla disseeted.	Typieal carcinoma. 1 small nodule of carcinomatous tissue found in neighborhood of large artery.	Reeurrenee in pleura.	Died Oetober, 1899.
17	50	Mrs. P.....	Diffuse infiltrating growth occupying greater part of corpus mammæ. Axillary glands enlarged.	Some weeks.	Jan.. 1901.	Breast and costal portion of peetoralis major completely removed and axilla disseeted.	Medullary cancer with lymphatie and probably venous infeetion.	July, 1904, in edge of sternum or rib.	Died August, 1906.
18	52	Mrs. A.....	Diffuse thiekened area occupying nbout 6 ems. in generally fibrous breast. Lymph nodes in axilla.	Just noticed.	Oet., 1901.	Breast and eostal portion of pectoralis major removed. Axilla disseeted.	Scirrhous cancer with secondary infection of the lymph nodes.	Operation for reeurrenee in skin May and Oet.. 1902. 1903. 1904.	Died in Mar., 1906.
19	71	Mrs. B.....	Small breast with retraeted nipple. 2 flat elevated infiltrations from skin. Other breast removed in 1872.	Some months.	Feb. 1902.	Breast and peetoralis major removed. Axilla dissected.	Scirrhous cancer with secondary infeetion of skin	Dee., 1904. Many supraclavicular glands.	Died Oetober. 1906.
20	48	Mrs. E.....	Beneath nipple retraeting fibrous growth about 2 ems. in greatest extent.	.....	April, 1902.	Breast and both pectoralis musles removed. Axilla cleaned.	Scirrhous caneer and secondary infection of axillary lymph glands.	Soon.	Died in Oet., 1902.

21	About 68	Miss N.....	Dense nodule 1.5 cm. in diameter No glands in axilla.	.....	June, 1902.	Breast and pectoralis major and minor removed. Axilla cleaned.	Caneer of scirrhous type. No infected lymph nodes found.	Recurrenee probably in spinal eolumn, 1904.	Died soon after in 1904.
22	About 58	Mrs. R.....	Diffusely fibrous breast and in it a dense nodule 2 cms. in diameter. Glands in axilla.	Some months.	Oct., 1902.	Breast with peetoralis major and minor removed. Axilla dissected.	Scirrhous caneer and secondary infection of axillary lymph nodes.	June, 1903. Local recurrenee.	Died.
23	About 50	Mrs. B.....	Hard, diffuse, ramifying growth. Axillary glands.	Some weeks.	Dec., 1902.	Breast with peetoralis major and minor removed. Axilla dissected.	Diffuse adenocarcinoma with infeetion of axillary glands.	Aug., 1904. Several large glands in neck.	Died in 1907.
24	42	Mrs. H.....	A hard nodule about 2–3 cms. in diameter.	10 months.	Dec., 1902.	Breast with axillary contents removed with sternal portion of peetoralis major.	Adenoeareinoma of rather a scirrhous type with commencing axillary infection.	May, 1907. Recurrenee along axillary vein and at root of neck.	Living.
25	75	Mrs. S.	Breast almost entirely occupied by a hard tumor. Axilla eontained several hard nodules.	3 months.	March, 1903.	Breast and pectoralis muscles removed. Axilla cleaned.	Medullary carcinoma with secondary involvement of lymph ehannels and pectoralis muscle.	July, 1903. Local recurrenee.	Died in Dec., 1904.
26	51	Mrs. D.....	Hard tumor 4 cms. in diameter and second nodule 1–1½ em. near axilla border. Several glands in axilla.	.....	March, 1903.	Breast and pectoralis musele removed. Axilla cleaned.	Carcinoma. Several infeeted nodules found in axilla.	July, 1906. Arm mueh swollen. Mueh pain.	Living.
27	About 63	Miss H.....	.....	.....	April, 1903.	Breast and pectoralis major and minor removed. Axilla eleaned.	Carcinoma.	Sept., 1905, recurrent nodules in skin and lymph node removed in 1905 and twiee in 1906.	Living.

TABLE II.—RECURRENT CASES.—*Continued*

No.	Age.	Name.	Extent of involvement.	Duration.	Date of operation.	Magnitude of operation.	Variety of carcinoma.	Recurrence.	Result.
28	About 58	Mrs. C.	Tumor about 4 cms. in diameter beyond limit of mammary gland in direction of axilla.	Some weeks.	June, 1903.	Breast and pectoralis muscles removed. Axilla cleaned.	Typical carcinoma. A small metastases in one lymph gland.	First in Sept.. 1905. Operation in 1905 to 1906.	Living.
29	65	Mrs. S.	Outer side of nipple hard tumor 10–15 cm. in diameter. not adherent. Several nodules in breast.	2 years.	Oct., 1903.	Breast removed with pectoralis muscles. Axilla cleaned.	Adenocarcinoma with involvement of axillary glands, gland under pectoralis muscle.	Dec., 1904. Much pain in chest both sides.	Died.
30	57	Mrs. DeW....	Large pendulous breast with hard lump in upper part. Glands in axilla.	7 months.	Jan.. 1904.	Breast removed with pectoralis muscles. Axilla dissected.	Scirrhous cancer with cancerous axillary lymph nodes.	Aug., 1904. Local and general recurrence.	Died.
31	About 65	Miss C.	Ulcerated surface over tumor about size of 5 cent piece. Several enlarged glands in axilla.	.....	Jan. 1904.	Breast and pectoralis major removed. pectoralis minor cleaned on both surfaces. Axilla dissected.	Scirrhous carcinoma. No infected glands found.	Jan., 1907. Suspicious rheumatic pain and cachexia. No local recurrence.	Living.
32	About 36	Mrs. H.....	Indurated growth about 3 cm. in diameter. Breast tissue everywhere enlarged and fibrous. Several large lymph nodes.	Few weeks.	Feb.. 1904.	Breast and pectoralis major and minor removed and tissue in subscapular and subclavicular regions dissected. Axilla cleaned.	Medullary cancer with gen. epithelial proliferation. Seconday infection of of lymph nodes.	May, 1906. Beneath clavicle.	Died January, 1907.
33	.....	Mrs. B.....	Outer portion breast occupied by diffuse hard growth infiltrating the tissue in all direcitons. Glands in axilla.	.....	July. 1894.	Breast and pectoralis major and minor glands removed from apex of axilla and surface of subscapula.	Diffuse medullary carcinoma with involvement of axillary glands.	Recurred locally soon.	Died 1905.

had had the other breast removed thirty years before for what was believed to be a cancer; and this belief was strengthened by the fact that recurrent nodules had been removed on three occasions since; the last one fourteen years before the second breast developed the disease. Unfortunately no microscopical examination had been made of any of these specimens.

From this study it appears that in this small series of cases the question of recurrence depended more on the character of the growth, and the degree of involvement of the lymphatic system than upon the thoroughness of removal. If the disease had affected many lymphatic glands it was sure to recur even after a thorough removal of all of the muscles and axillary contents. On the other hand, in the nine cases that did not show a recurrence the lymphatic involvement was slight in all while in seven out of the nine the muscles were not removed.

These facts give us a basis for a somewhat greater accuracy in prognosis, but should not be used as arguments against extensive radical operations; for it is impossible in any given case to tell how far the cancer cells have penetrated the surrounding lymphatics and the chance of getting ahead of the disease is improved when the efferent lymphatics have been removed to as great a distance as possible.

In Case 12 the nodule in the breast was small and so situated in the centre of the gland that I felt safe in leaving the pectoral muscles. The recurrence occurred in the muscle thus mistakenly spared, and since that experience I have removed the muscle in all cases.

Attention should, I think, be directed to the danger of recurrence from the self inoculation of the wound with cancer cells set free during operation. This danger is to be reckoned with when a doubtful growth has been cut into for the purpose of establishing the diagnosis before proceeding to its thorough removal. If the lymphatic channels between the breast and the axillary glands or the muscles have been cut across during operation there is danger that during subsequent manipulations cells contained in those channels may be pressed out into the wound. The possibility of this occurring is a reason for

removing breast, muscle and axillary contents in one mass and for keeping the dissection outside of the lymphatic distribution as far as possible. When a cancer has been cut into for purpose of diagnosis the opening should be tightly closed before further operation is undertaken and every precaution should be taken by changing instruments, etc., to avoid inoculation.

Irrigation of the wound may be used on such occasion as an additional safeguard, and in cases where the operation has gone close to the cancer or through suspicious tissues, I have applied tincture of iodine to the surface of the wound after the manner more commonly employed in the presence of tuberculosis; and this procedure has seemed to me to prevent a quick recurrence when such appeared otherwise inevitable.

X-ray Treatment of Mammary Cancer.—In one case, above alluded to, an inoperable cancer was treated by the X-ray for nearly two years, and it was the opinion of those who watched the patient that the growth was checked and delayed by this treatment. In Case 18, several little nodules appeared in the skin six months after operation. These were promptly removed, but others soon appeared and were again removed only to be followed by still others. The X-ray treatment was then adopted, and under it several nodules disappeared and further reappearance was distinctly checked. For three years under intermittent periods of X-ray treatment the disease made little appreciable progress, but then evidence of deeper trouble in the chest and back appeared and she died four years and a half after the operation.

Case 27 is another in which the X-ray seemed to have a decided effect in retarding the growth. It is now my practice to give each patient a course of X-ray treatment immediately after the operation with the idea of destroying any bits of cancer that may have escaped removal. For this the exposures to the X-ray are made twice a week for three or four months after operation. The cases treated in this way have occurred within the past three years, and are not included in this report, as the time elapsed is too short to judge of results.